

REMARKS

Claims 1-21 are pending in this application. By this Amendment, claims 1 and 8-15 are amended. Claims 16-21 are added. No new matter is added.

I. Specification

Although not objected to, the Specification is amended to correct minor typographical errors.

II. Claim Objections

Claims 11-15 are objected to for informalities. As these claims are amended, withdrawal of the objection of claims 11-15 is respectfully requested.

III. Claim Rejections Under 35 U.S.C. §112

Claims 8-10 are rejected under 35 U.S.C. §112, second paragraph. As these claims are amended in response to the rejection, withdrawal of the rejection of claims 8-12 under 35 U.S.C. §112, second paragraph, is respectfully requested.

IV. Claim Rejections Under 35 U.S.C. §102

Claims 1 and 6 are rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent Application Publication 2002/0009623 to St. Pierre et al. ("St. Pierre"). The rejections are respectfully traversed.

St. Pierre fails to disclose each and every feature recited in the rejected claims, as amended. For example, a fuel cell control system for controlling a fuel cell stack constructed by a plurality of individual cells each of which generates an electric power by an electrochemical reaction of hydrogen and oxygen, said fuel cell control system comprising output voltage measuring means for measuring output voltages of all or a part of said individual cells; and diagnosing means for diagnosing said fuel cell stack on the basis of the measured output voltages and their statistics, and for diagnosing at least whether or not an amount of water involved in said fuel cell stack is excessive based on said output voltage and

an average voltage of said output voltages, wherein said operation of said fuel cell control system is controlled according to said diagnosis result of said diagnosing means, as recited in amended independent claim 1.

St. Pierre relates to techniques to improve cold starting of an electric power generating system that uses a solid polymer fuel cell (paragraph [0002]). In St. Pierre, an output voltage of a fuel cell stack is monitored, and the operation of the fuel cell stack is controlled only based on the output voltage monitored. Cell responses to change in the relative humidity are disclosed as being recorded by measuring a membrane electrode assembly voltage and resistance (paragraph [0075]). The applied reference further discloses empirically determining certain operating conditions such as wetting and drying conditions and the effect of these conditions on resistance in voltage. The empirical experiments disclosed in St. Pierre are to determine an optimal dry out period that does not adversely affect initial cold startup.

Thus, St. Pierre is silent regarding diagnosing whether an amount of water involved in a fuel cell stack is excessive based on output voltage and an average voltage of the output voltage is measured, wherein operation of the fuel cell control system is controlled according to the diagnosis result. Accordingly, withdrawal of the rejection of claims 1 and 6 under 35 U.S.C. §102(b) is respectfully requested.

Claims 1, 2, 4, 6, 7, 9 and 11-15 are rejected under 35 U.S.C. §102(b) as anticipated by JP2002-164065 (JP 065). The rejection is respectfully traversed.

JP 065 discloses a voltage detection means that detects each voltage of all cells in a fuel stack (paragraph [0032]). A current of the fuel cell stack is detected and if there is a drop in voltage, a valve 9 is changed so that the direction of the circulating cooling water is altered (paragraphs [0041]-[0042]). The voltage is detected by detecting the voltage of each cell which constitutes the fuel stack and forwarded to a control unit 11 (paragraph [0045]).

Thus, in JP 065, the output voltage of each fuel cell in the stack is monitored to determine whether the amount of water in the fuel stack needs to be increased or decreased based on a distributed voltage value measured from an inlet and to an outlet end of the fuel stack. Thus, JP 065 fails to disclose diagnosing whether or not an amount of water involved in the fuel stack is excessive based on the output voltage and an average voltage of the output voltage, wherein the operation of the fuel cell control system is controlled according to the diagnosis result of the diagnosing means. Therefore, withdrawal of the rejection of claims 1, 2, 4, 6, 7, 9 and 11-15 under 35 U.S.C. §102(b) is respectfully requested.

Claims 1, 2, 5, 6, 7 and 10 are rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent Application Publication 2002/0091475 to Hashimoto et al ("Hashimoto"). The rejection is respectfully traversed.

Hashimoto relates to a vehicle control system designed to improve the transmission of the efficiency of data and the responsiveness of a system (Abstract Hashimoto). In the system, a plurality of electronic control units are included to detect and control differing systems of the vehicle. A sub-voltage detecting control unit ECU-125 monitors the voltage values of a plurality of cells that form a fuel cell 112, and calculates, for example, the average value, standard deviation, and maximum and minimum values of the voltage value detected or the plurality of cells and sends the results to a cooperative control unit ECU-121 (paragraph [0084]). The ECU-121 determines whether or not the fuel cell is operating normally based on the detected values of the average value, standard deviation, and the maximum and minimum values of the voltage values for the plurality of cells received from the cell voltage detection control unit ECU-125 (paragraph [0100]).

However, Hashimoto is silent regarding the additional claimed feature of diagnosing whether an amount of water involved in the fuel cell stack is excessive based on the output voltage and an average voltage of the output voltages, wherein the operation of the fuel cell

control system is controlled according to the diagnosis result of the diagnosing means.

Accordingly, withdrawal of the rejection of claims 1, 2, 5, 6, 7 and 10 under 35 U.S.C.

§102(b) is respectfully requested.

V. Claim Rejections Under 35 U.S.C. §103

Claims 3, 4 and 8-10 are rejected under 35 U.S.C. §103(a) as unpatentable over Hashimoto in view of JP2002-164069 (JP 069). The rejections are respectfully traversed.

Neither Hashimoto or JP 069 disclose or suggest each and every feature recited in the rejected claims. Further, claims 3, 4 and 8-10 are allowable for their dependency on independent claim 1 for the reasons discussed above, as well as for the additional features recited therein. As JP 069 fails to overcome the deficiencies of Hashimoto discussed above regarding rejection of independent claim 1, the combination of references fails to disclose or suggest each and every feature recited in the rejected claims. Accordingly, withdrawal of the rejection of claims 3, 4 and 8-10 under 35 U.S.C. §103(a) is respectfully requested.

VI. New Claims

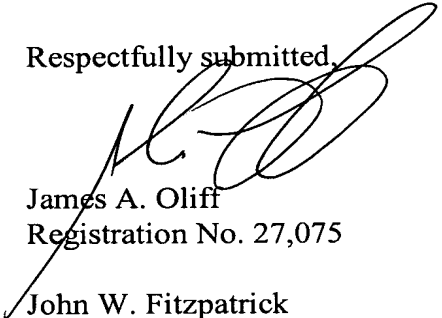
None of the applied references, whether considered alone or in combination, disclose or suggest each and every feature recited in claims 16-21. For example, the combination of references fails to disclose or suggest the fuel cell control system according to claim 1, wherein when said diagnosis result of said diagnosing means indicates that said amount of water involved in said fuel cell stack is excessive, a supply pressure of said hydrogen as a fuel gas to be supplied to said fuel cell stack is relatively increased to a supply pressure of said oxygen as an oxidizing gas, and when said diagnosis result of said diagnosing means indicates that said amount of water involved in said fuel cell stack is insufficient, said supply pressure of said fuel gas to be supplied to said fuel cell stack is relatively decreased to said supply pressure of said oxidizing gas.

VII. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-21 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,


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Attachment:
Amendment Transmittal

Date: March 22, 2006

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